

April 29, 1949.

Dr. S. C. Rittenberg,  
Dept. Bacteriology,  
University of So. California,  
Los Angeles 7, Calif.

Dear Dr. Rittenberg,

Just when we received the poona and cholerae-suis cultures which you sent last November, we ran into some very encouraging results on recombination of biochemical mutants in typhimurium, and it is only lately that we have again looked at the poona and c-s. Mr. Norton Zinder has been working on them, and has made the following observations which may be of some slight interest to you.

cholerae-suis 34

The ~~phage-resistant~~ 34 is not a prototroph, but requires thiamin for growth. Even with this supplement, however, it grows very poorly in synthetic medium, and, indeed, not very well in complete medium. We have had a great deal of difficulty in obtaining biochemical mutants because of this poor growth. However, we may have some in hand soon.

The poona mutants are all right. The "unknown growth requirement" of the arginineless double mutant is for xanthine, and other purines can be substituted. We have had a lot of luck in getting mutants in 91 and expect to have a suitable series before long. However, the responses of the arginineless-xanthineless mutant are sufficiently clearcut for most present purposes. May I suggest that if this mutant (our no, SW-75) has the appropriate antigenic constitution, and is susceptible to transformation by 34-lysates, that it would worthwhile to test the antigenically transformed cultures for their nutritional requirements. If the phenomena are distinct, as I suspect they are, I am very anxious to have a clear separation made between transformations and the genetic recombination of biochemical characters. If you are not situated as to do routine tests for nutritional requirements, we will be glad to test them for you and send you the results, providing this would suit your convenience better.

As soon as the appropriate mutants have been gathered, we hope to continue with tests for nutritional recombination. In typhimurium, we have gotten prototrophs from combinations of various double mutants, but as I may have indicated previously, we have not been able to solve the problem of lysogenicity. The parental cultures carry weak phages active against each other, and the prototrophs are usually suicidal. Conceivably, lysogenicity may have some bearing on your results, but I am not prepared to suggest just how.

Dr. Maaløe who visited here two weeks ago mentioned that you had made considerable progress on transformations. I hope that you have planned to attend the S.A.B. meeting in Cincinnati, so that we may have an opportunity for a detailed discussion. If not, you know that I would be glad to hear any details that you are ready to give out.

Yours sincerely,

Joshua Lederberg  
Assistant Professor of Genetics